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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/652,008	08/31/2000	Junji Kamikubo	P19585.P03	2940

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EXAMINER	
REITZ, KARL	
ART UNIT	**PAPER NUMBER**
2624	4

DATE MAILED: 03/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/652,008	Applicant(s) KAMIKUBO ET AL.	
	Examiner Karl R. Reitz	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 August 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☒ Claim(s) *1-4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 August 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 231, 232, 331, 332, 431 and 432. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-4 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Both claims 1 and 3 claim a "diffraction lens structure" 131a figure 2. From the specification, it is unclear how the diffraction lens structure is formed on lens 131. Is the "diffraction lens structure" an overlay or grooves cut into the lens shown by Kamikubo

(6,124,962) figure 3? Furthermore, the particulars of how applicant's "diffraction lens structure" compensates for lateral chromatic aberration needs to be disclosed and discussed. Since these issues are not resolved in the dependent claims, 2 and 4, they are rejected as well.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamikubo (6,124,962) in view of Iizuka (6,028,688).

7. In accordance with claim 3, Kamikubo discloses a first scanning lens 20 providing power in the main scanning direction (col. 4 lines 44-45).

8. Kamikubo further discloses a second correcting lens 30 (col. 4 line 50).

9. Kamikubo further discloses a diffraction lens structure 15a that compensates for a lateral chromatic aberration in the main scanning direction (col. 4 lines 35-36).

10. However, Kamikubo does not disclose expressly an fθ lens, or that the first lens is made from glass and the second from plastic.

11. Iizuka discloses fθ lenses, which include a glass lens 22 that provides substantially all the power, in the main scanning direction (col. 9 lines 46-48) and a plastic 21 lens that compensates for aberrations (col. 9 lines 56-61).

12. Iizuka and Kamikubo are combinable because they are from the same field of endeavor, namely scanning optical systems.

13. Therefore, at the time of invention, it would have been obvious to a person of ordinary skill in the art, to use fθ lenses, which include a glass lens and a plastic lens, as disclosed by Iizuka, in Kamikubo's system.

14. The motivation for doing so would have been to use the glass lens because it provides the power in the main scanning direction (col. 9 lines 46-48), and a plastic lens because it compensates for aberrations (col. 9 lines 56-61) and costs less to produce.

15. Although the Iizuka and Kamikubo do not disclose expressly that each fθ lens satisfies the properties of $0.0<fa/fd<0.2$ and $0.75<fa/fg<1.2$, from the combination of Iizuka and Kamikubo, it would have been obvious to ensure that the lenses satisfy those conditions, by altering the shape of the lens to change the properties (as shown in Iizuka in tables 1-7) in order to optimally correct for lateral chromatic aberration, without causing changes in the power of the lenses.

16. In accordance with claim 4, Kamikubo discloses that the diffraction lens structure 15a is formed on the refraction surface of a lens 15 (col. 4 lines 35-36 and col. 5 lines 61-63).

17. Therefore, the combination of Kamikubo and Iizuka would result in the formation of the diffraction lens structure 15a (Kamikubo) on the refraction surface of the plastic lens 22 (Iizuka).

18. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koide (5,181,137) in view of Kamikubo in further view of Iizuka.

19. In accordance with claim 1, Koide discloses a tandem type printer (col. 1 lines 9-14), which includes a plurality of (namely four) scanning optical systems (col. 3 lines 36-38), each of which includes a laser source 100-103 that emits a laser beam (col. 3 lines 36-38 and 41-42), and a deflector 141-143 that deflects the laser beam to scan in a main scanning direction, within a predetermined angular range, and that the fθ lens converges the laser beam emitted by said plurality of scanning optical system (col. 3 lines 57-64).

20. Koide further discloses a plurality of photoconductive drums 50-53 (col. 4 lines 12-13) arranged to receive the laser beams emitted from said plurality of fθ lenses, respectively, the laser beams scanning on said plurality of photoconductive drums, respectively (col. 4 lines 17-21 and 63-68), images formed on said plurality of photoconductive drums being developed and transferred in an overlaid fashion on a sheet (since each laser has different optical information, col. 3 lines 36-38).

21. However, Koide does not disclose expressly a glass lens that provides power in the main scanning direction, a plastic lens that compensates for aberrations, and a diffraction lens structure that compensates for a lateral chromatic aberration in the main scanning direction.

22. Kamikubo discloses a first scanning lens 20 providing power in the main scanning direction (col. 4 lines 44-45).

23. Kamikubo further discloses a second correcting lens 30 (col. 4 line 50).

24. Kamikubo further discloses a diffraction lens structure 15a that compensates for a lateral chromatic aberration in the main scanning direction (col. 4 lines 35-36).

25. However, Kamikubo does not disclose expressly an fθ lens, or that the first lens is made from glass and the second from plastic.

26. Iizuka discloses fθ lenses, which include a glass lens 22 that provides substantially all the power, in the main scanning direction (col. 9 lines 46-48) and a plastic 21 lens that compensates for aberrations (col. 9 lines 56-61).

27. Iizuka, Kamikubo and Koide are combinable because they are from the same field of endeavor, namely scanning optical systems.

28. Therefore, at the time of invention, it would have been obvious to a person of ordinary skill in the art, to, use fθ lenses, which include a glass lens and a plastic lens, as disclosed by Iizuka, in Kamikubo's system. Further, it would have been obvious to add the lens structure resulting from the combination of Iizuka and Kamikubo to the apparatus of Koide with multiple replications of the lens structure and photoconductive drums.

29. The motivation for doing so would have been to use the glass lens because it provides the power in the main scanning direction (col. 9 lines 46-48), and a plastic lens because it compensates for aberrations (col. 9 lines 56-61) and costs less to produce. Further, the motivation would have been to print in color, in which each laser and drum pair performs the processing for a different color.

30. Although the Iizuka and Kamikubo do not disclose expressly that each fθ lens satisfies the properties of $0.0<fa/fd<0.2$ and $0.75<fa/fg<1.2$, from the combination of Iizuka and Kamikubo, it would have been obvious to ensure that the lenses satisfy those conditions, by altering the shape of the lens to change the properties (as shown in

Iizuka in tables 1-7) in order to optimally correct for lateral chromatic aberration, without causing changes in the power of the lenses.

31. In accordance with claim 2, Kamikubo discloses that the diffraction lens structure 15a is formed on the refraction surface of a lens 15 (col. 4 lines 35-36 and col. 5 lines 61-63).

32. Therefore, the combination of Kamikubo and Iizuka would result in the formation of the diffraction lens structure 15a (Kamikubo) on the refraction surface of the plastic lens 22 (Iizuka).

Contact Information

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl R. Reitz whose telephone number is (703) 305-8696. The examiner can normally be reached on Monday-Friday 8:00-4:30.

34. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on (703) 305-7452. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KRR

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